

IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF VIRGINIA
ROANOKE DIVISION

JEFFREY S. HODGES, :
TOMMY LEE BONDS and :
JOHN PAUL SPANGLER, : Civil Action No. [redacted]

Plaintiffs : 7:12cv00362

vs.

FEDERAL-MOGUL CORPORATION, :
et al, :
:

Defendants

November 12, 2013
9:30 a.m.

DEPOSITION OF:

PATRICK J. MCGINLEY

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1 A I don't know.

2 Q Who pays your bills?

3 A I don't know. I don't do bills. I do
4 the hours and Patti, young lady in my office, sends
5 the bills to Brent, and somebody sends us a check. I
6 don't see the check or have anything to do with that,
7 so I don't know.

8 Q Are they paying you?

9 A Absolutely.

10 Q And is that the file that you have over
11 there --

12 A It is, sir.

13 Q -- case file? Would that have
14 information on who paid? Would that have invoice
15 information or anything like that?

16 A It might have the invoices that would
17 say, such-and-such invoice went out, paid in full.
18 But it won't have a copy of the check or who sent a
19 check or whatever. I have no idea.

20 Q That's fine. I might ask you to take a
21 look at the file a little bit later.

22 A Sure.

23 Q And I think you initially visited the
24 site on February 11; is that right?

1 A That's correct.

2 Q And that's of 2011?

3 A That's correct.

4 Q And just walk me through that first
5 site inspection?

6 A Pretty much what I did, walk through.

7 There were a number of people there. It was a group
8 examination as I recall. And I was given the
9 opportunity to walk through the interior of the
10 structure, observe some of the materials that had
11 been removed and were placed outside of the
12 structure.

13 And I examined them and photographed
14 them, took a look at the layout, the destroyed bag
15 house, the surviving bag house, of course, and
16 generally familiarized myself with the structure and
17 the area. Then get a feel for what was being said in
18 the various reports from the public sector, generated
19 reports that were available at that time.

20 Q Do you recognize, when I say the back
21 draft damper, do you understand what that is?

22 A Yes, sir.

23 Q Did you get a look at the back draft
24 damper?

1 A Sure.

2 Q Did you take pictures of it?

3 A I did.

4 Q And to your knowledge was it intact
5 when you looked at it?

6 A Intact to the extent that all of the
7 various components were there, but certainly I'm sure
8 it didn't look like it did before the explosion. It
9 was misshapen shall we say.

10 Q Uh-huh. How long do you recall did
11 that site inspection take?

12 A We were probably there for four or five
13 hours that day.

14 Q And did you do any measurements,
15 calculations or anything of that sort while you were
16 there?

17 A It wasn't any need for me to do that.

18 Q You mentioned the public investigation.
19 Was the OSHA investigation going on at that time?

20 A I don't know. I had nothing to do with
21 that other than to read their finished product
22 document and the interviews that they took, etcetera.
23 I don't know what the time frame was on that, sir.

24 Q But you did review the final report?

1 separated, if nobody was moving the material around
2 that day, this probably would not, this would not
3 have happened.

4 Q So specifically it's the moving around
5 of the aluminum dust, the vacuuming, the removal of
6 part of the duct, those are the things that you
7 identify as contributing to the explosion. Is that
8 right? Is that fair?

9 A Yeah, I think they contributed to the
10 creation of the atmosphere whereby this event could
11 occur. It's like saying if this room was filled with
12 gas and you walked in and flipped the light switch
13 and the room blew up, you switched the light switch.

14 You were the one that turned the lights
15 on, but there wouldn't have been an explosion if you
16 didn't flip the light switch. It's the same
17 classification as I see it, sir.

18 Q Okay. Have you ever turned down any
19 cases that Brent Brown brought to your attention?

20 A I don't know. I don't think so, but I
21 honestly don't know.

22 Q Have you ever done work for Brent Brown
23 involving a dust cloud explosion prior to this?

24 A No, sir.

1 Q And trying to remember whether it was
2 you or Mr. Schloss. Did you conduct any, personally
3 conduct any interviews?

4 A I talked to a couple of the
5 employees.

6 Q Do you remember who?

7 A Over the telephone but I didn't sit
8 down and take an interview or record an interview or
9 anything. I did talk to Mr. Hodges and I talked to
10 Mr. Collins, both on the telephone.

11 Q Danny Collins?

12 A Yes, sir, just general information
13 stuff.

14 Q And you didn't speak with John
15 Spangler?

16 A I don't recall speaking to
17 Mr. Spangler. I might have.

18 Q Do you recall speaking --

19 A But I don't recall it.

20 Q That's fine, and I apologize for
21 interrupting.

22 A That's all right.

23 Q Do you recall speaking with Tommy
24 Bonds?

1 A I do not, sir.

2 Q Do you have a list of all the documents
3 that you reviewed in preparing your report?

4 A Yes.

5 Q And you have given it to us as part of
6 your report?

7 A I have.

8 Q Are there any documents besides the
9 ones listed here that you reviewed?

10 A I'm going to ask you does that list
11 include all of the defendant's expert reports?

12 Q It does not.

13 A I got them. I read all of them. And I
14 must have received them after this.

15 Q That's what I thought. I think there
16 was also some timing with regard to some of the
17 depositions. Did you read Ed Thompson's
18 deposition?

19 A Who's he?

20 Q He is the senior product manager for
21 LCM Corporation who was involved initially in
22 contracting with Federal-Mogul?

23 A I might have read it but if I did, I
24 don't recall it.

1 or whatever, you might want to get into ascertaining
2 why it's inconsistent. From the private sector
3 perspective, I think if you have got clear, physical
4 evidence that what the witness is saying they saw
5 they didn't see, well, then you just alleviate it
6 from the, it's still data, but it's inaccurate data
7 and it does not get included your hypothesis.

8 Q So it doesn't serve then as a
9 foundation for what you opine then? Does that make
10 sense?

11 A Yeah, that makes sense.

12 Q It wasn't very well said.

13 A I think you have to look at it on a
14 case by case basis. You could get very accurate and
15 very inaccurate data from the same statement. You
16 know, I have interviewed fire fighters, supposedly
17 trained observers, standing at a location looking at
18 an event. Talk to the three of them separately, you
19 would think they were on different planets, much less
20 standing on the same corner looking at the same
21 thing.

22 Different people perceive things
23 differently and express it differently. But absent
24 clear evidence of either attempted deception or just

1 creates the exothermic or heat producing reaction.
2 That was mentioned in all of the expert reports, all
3 the defense expert reports.

4 You know, it's a given that this
5 material, these materials when they get blended, the
6 resultant reaction will be exothermic, that would
7 produce heat. That's something that I knew. So I
8 didn't need a eureka moment for the heat source.

9 I think that the, this report says
10 basically that this is a possibility. It's a known
11 phenomenon that it will produce heat and that that
12 heat production can, when conditions are just right,
13 lead to a fire and/or explosion. That's a fact.

14 Q And what you have said in here is not
15 just that that is a thing that happens. What you
16 have said is that this initial explosion occurred
17 within the bag house. What testing did you do of
18 opinion number two?

19 A I'm sorry?

20 Q What testing did you do? We talked
21 earlier about the scientific method.

22 A Right.

23 Q And how you develop, you gather data.
24 You evaluate the data. You formulate a hypothesis

1 and you test the hypothesis?

2 A Correct.

3 Q Did you do any testing to try to
4 disprove opinion number two?

5 A Yeah, I tested that opinion against the
6 data that was available and found nothing that was
7 inconsistent with it.

8 Q So you --

9 A You don't have to sit in a laboratory
10 and pour things from beaker to beaker to conduct
11 testing. Comparative testing, etcetera, that is part
12 of the normal investigative process. And I do that
13 all the time and did it in this case, sir.

14 Q So when you say testing then, you're
15 really referring to you made this hypothesis and then
16 you looked at all the evidence again?

17 A Sure. It's a combative testing
18 process, not a physical testing process, but it is
19 testing nonetheless.

20 Q And as a part of that testing process
21 you evaluated all the different sources of data that
22 you have listed here; is that right?

23 A Sure.

24 Q Why don't you just go through the

1 reasoning that supports opinion number two for me?

2 A Well, I think the reasoning is
3 explained in opinion number two. I think of all the
4 data that was collected as a result of the
5 investigation into this matter by all parties that
6 became part of this file, all of the data I believe
7 indicates that the initiated of the event occurred
8 outside the structure at the bag house.

9 I mentioned in there the rationale. I
10 belief that the video of the incident from the
11 security camera, which wasn't really a video of the
12 incident, but it was a video of circumstances going
13 on at the moment that this occurred at that specific
14 location. I think that that shows, in my opinion,
15 that the initial pop or the initial light burst,
16 etcetera, occurred outside the building, not inside
17 the building.

18 And there is only one eye witness,
19 which I mentioned in here, Mr. Hodges, who described
20 the event at two locations in his deposition, the
21 pages, etcetera, and lines are mentioned here, that
22 he saw the fire ball coming at him from beyond the
23 flame arrester or what he referred to as a flame
24 arrester, which puts it outside the building in the

1 bag house.

2 There was not one bit of data in any of
3 the other documents reviewed that contradicted that.
4 I mean I've read all the defense expert reports and
5 they all discounted it. But nobody listed a fact or
6 a piece of evidence that justified the elimination of
7 that information. Why would you say the man didn't
8 see what he saw?

9 There wasn't any contradicted data
10 whatsoever produced, other than to say, ah, he didn't
11 see that so it didn't happen that way. You have an
12 obligation to be a little more accurate than that,
13 sir.

14 Q So you have mentioned two things --

15 A Yes, sir.

16 Q -- to my understanding? And you have
17 done it in your report as well?

18 A I have, sir.

19 Q You say, one, you have got the video,
20 which you interpret to show that the initial
21 explosion happened in the bag house?

22 A Outside the building.

23 Q Outside the building.

24 A And the only thing, to my knowledge,

1 that exploded outside the building was the bag
2 house.

3 Q Well, there is the vacuum truck too.

4 A Pardon me?

5 Q The vacuum truck.

6 A The vacuum truck did not explode, sir.

7 The vacuum truck burned. There was no explosion
8 there. I examined that truck.

9 Q And that was one of the things also
10 though that was outside and --

11 A It was outside, but it didn't explode.

12 Like I said, what I saw in that flash, that was not a
13 truck burning a hundred feet away or whatever
14 distance it was. That was an explosion that I saw.
15 And to my knowledge the only thing that exploded
16 outside of that building was the bag house.

17 Q Okay. So you have got the video clip
18 and you've got Jeff Hodges' testimony. What else?

19 A Of all of the data available, that was
20 it. They were the primary things that were, in my
21 opinion, uncontroverted. And, consequently, when
22 you're doing your origin and cause examination,
23 you're looking for origin first. And there were two
24 specific, independent, in my opinion, pieces of data

1 that were uncontroverted that pointed to the event
2 initiating outside.

I didn't see anything, not in any of
the documents or any of the photos or, for that
matter, any of the reports that provided data points
that would make me change that opinion, because they
simply don't exist.

8 Q And I'm just trying to get an
9 understanding of the foundation --

10 A Sure.

11 Q -- for opinion number two. So is it
12 fair and correct to say that you base opinion number
13 two on the video and Jeff Hodges' testimony?

14 A I base upon number two, which is
15 referring to origin of fire only, yes, sir, on those
16 two things primarily, and the fact that nothing else
17 contradicted it, that there was no other information
18 given by any witness or any other source that made
19 that information incorrect

20 | 0 If you take away the video clip --

21 A Yeah.

22 Q -- do you still come to the same
23 conclusion with regard to opinion number two?

A Yeah, I think I would, sir. I think I

1 Q Can you draw what he described?

2 A I think what he described basically was
3 a, he described what he could see, which was a
4 cylindrical-shaped mechanism. And from looking
5 through the ductwork, that's all you're going to see.
6 And I believe it's my recollection that he described
7 the pivoting point as being at the diameter,
8 mid-point, pivoting point, indicating a rotating flap
9 situation. That is not what the device was. The
10 device was hinged at the top and held up from the
11 bottom by the accumulated debris or materials that
12 were in the arrester itself.

13 So I remember reading his description
14 and thinking, you know, this thing is rectangular or
15 square. When I saw it laying on the ground, I
16 thought, he is looking through the pipe at it. Yeah,
17 he is looking through something cylindrical. He
18 thought that the flapper was cylindrical, because all
19 he could see was the circumferential picture of the
20 flap in whatever state it was in or position it was
21 in.

22 He was clearly mistaken about the pivot
23 point, but I think that his observation of making it
24 cylindrical legitimate in that it was the only thing

1 he could do. It was all he could see was the
2 circular view of something that in the big picture
3 outside the building was of a different shape.

4 Q Do you recall him saying that he could
5 see over the top of the flap?

6 A I do.

7 Q And how do you characterize that
8 testimony?

9 A I believe you would have to ask him
10 that, but he could see beyond the flap. Now, whether
11 he was seeing through the flap in a raised position
12 as a result of the top hinge, which is reality, or
13 how he managed to see by it. At the time of his
14 deposition his deposition he said he saw over the top
15 of it.

16 He saw over the top of the pile of
17 accumulated material in the arrester. But he surely
18 didn't see over the top of the flap with its hinged
19 portion. However, if you, I don't know how long
20 Mr. Hodges was looking down that 14-inch pipe.

21 Q I'm not asking you how long.

22 A Which I described, by the way, as
23 12-inches. I think everybody messed up the size of
24 that thing. I understand it's 14. But he described

1 neatly falling into a pile of equal dimension on all
2 sides. That pile of debris could have been, you
3 know, like an EKG that one end of it was much higher
4 than the other and that's the part that's holding,
5 and there was a clear line of sight through there
6 simply because of the air movement, etcetera when the
7 duct was operating.

8 I mean who said, if we assume that it's
9 a nice, flat, even surface of debris and that the
10 flap is down on top of it, then what you're saying
11 would probably be true. It would be very hard to see
12 by it. But who could say that? I mean there was
13 three inches of debris here there was and a half inch
14 of it here and there was four inches of it there.

15 Q Sir.

16 A There was clearly varying geometries in
17 the accumulated fines inside the ductwork and inside
18 the flash work, flame arrester, whatever. So the man
19 said he could clearly see past it. There is no
20 evidence offered by anyone that says he couldn't.

21 Q Let's just talk about what he is
22 saying.

23 A Okay.

24 Q You have just agreed with me that the

1 rectangular flap is larger than the cylindrical
2 duct?

3 A Correct.

4 Q Now, if it is larger than the
5 cylindrical duct and it's being propped open, he says
6 he sees a pile of dust?

7 A True.

8 Q How is it that he sees beyond the dust?
9 I just don't understand how you're seeing through it.

10 A Again, it would depend on the geometry
11 of the dust itself. You could have a pile of dust
12 there that was not a nice, flat accumulation. You
13 could have had the dust, like I said, with one side
14 within the confines of the arrester. One side of it
15 could have been three inches higher than the other
16 side.

17 There isn't any guarantee that it's
18 going to fall in the same spot, especially when you
19 have all that air moving through there. How do you
20 know. The man said he could see past it. He
21 described what it looked like past it. That sounds
22 pretty good to me, sir.

23 Q So you're saying that if there is a
24 partial build-up on one side of the cylindrical duct,

1 provided adequate data in the data research part of
2 the scientific method to formulate the hypothesis
3 that this fire started outside.

4 Q Okay. Let's talk about the first one.

5 A Okay.

6 Q And that's the one where you say the
7 ductwork, had the initial explosion occurred within
8 the ductwork, you believe the ductwork would have
9 been substantially deformed or words to that effect;
10 is that right?

11 A It would have been different than it
12 was.

13 Q Okay. It would have been blown up?

14 A It would have been different. I have
15 seen over-pressurizations many times. And I have
16 read the other expert reports, etcetera. And I
17 believe had this explosion occurred inside the
18 ductwork -- now, keep in mind, this has got to be an
19 explosion of sufficient intensity to provide the
20 blinding light that you saw on that video camera at
21 the initiation that the defense experts are saying
22 was occurring in the building which, by the way,
23 nobody in the building noticed. That's okay.

24 If it had occurred, that kind of force

1 is?

2 A Correct.

3 Q Meaning that there is no confinement?

4 A Meaning that there is no confinement at
5 that location. But if you go down farther, the
6 presence of that -- and there is no doubt there was
7 an energy released that way.

8 Q And fire chases fuel, correct?

9 A Fire moves with the fuel.

10 Q And air?

11 A It moves with the fuel. It has to feed
12 on fuel.

13 Q So if you don't have all five elements
14 of the dust cloud explosion pentagon, you could have
15 an ignition and/or a flame inside the ductwork.

16 Isn't that right?

17 A Well, the difference between what we
18 casually refer to as a fire and what we refer to as
19 an explosion, the only difference is the speed
20 associated with the two. Fire and explosions have
21 virtually the same general definition. It's rapid
22 oxidation with the admission of light and heat.

23 That's what an explosion is. That's also what a fire
24 is. Only with a fire it's a slower oxidation

1 process.

2 Q So you're saying there could not have
3 been a fire that started in the ductwork?

4 A There could not have been a fire that
5 gave us that flash of light that blinded out that
6 camera originating in that ductwork with Hodges
7 standing there keeping his head on his head, on his
8 shoulders.

9 Q So it's the video evidence that you are
10 saying is the key?

11 A As I been telling you since we sat
12 down, sir. It's all of the data put together,
13 carefully analyzed, all of the data studied to arrive
14 at a hypothesis and then checking of the hypothesis
15 against all of the data.

16 Q But all you're telling me is that it's
17 the video equipment?

18 A Well, then there is a piece of data
19 that contradicts what you're saying. That means you
20 cannot have that hypothesis, because it don't work.
21 There is contradictory evidence to eliminate that
22 hypothesis. You're back to square one.

23 Now, when you go back to square one you
24 analyze the data again and come up with one that does

1 Q Got it.

2 A That's where the utilization of
3 fluorinated hydrocarbons entered into the equation
4 years ago. It's no longer the triangle that we used
5 to teach the kids at school. It's a tetrahedron
6 now.

7 Q Okay. But the difference between those
8 two, you have all the elements needed for a fire in
9 the ductwork itself, correct?

10 A You did, yes, sir.

11 Q You just don't have the confinement
12 necessary for an explosion, correct?

13 A Like I said, depends on how far
14 downstream you are. Because you're talking about a
15 relatively small space. It's only 14 inches in
16 diameter, but there was an open-ended ductwork;
17 otherwise, Mr. Hodges isn't vacuuming.

18 Q And you agree that there was a
19 potential ignition source? I think we have described
20 it before, but static electricity was a potential
21 ignition source in the ducts?

22 A Static electricity is a potential
23 ignition source, yes, sir.

24 Q And it was that day?

1 into the equation. Now you got the materials in
2 motion again in the bag house, clearly demonstrated
3 by the fact that we had a pretty big explosion there.
4 And the only difference is the bag house isn't
5 running.

6 The reason that it didn't blow up on
7 Christmas Eve is because the bag house was not shut
8 down and the particulate put in motion. That
9 happened on New Year's Eve, and that's why the
10 explosion occurred that day.

11 Q I'm not sure I understand you. Are you
12 saying that at any point in which the bag house was
13 shut down, that would have resulted in explosion?

14 A No, I'm saying that at any point that
15 the bag house was shut down, the particulate came to
16 rest. The bag house operation, exhaust, movement of
17 air situation, was not operational. So the
18 particulate settles. No reason for it to move
19 around.

20 Consequently, you don't have the five
21 points that we have been talking about. You could
22 never get the explosion in there. But when you shut
23 it down and you don't have the exhaust going on and
24 you create the particulate movement because of the

1 vacuuming operation, that's when you get the
2 explosion, and that's exactly what happened here.

3 Q So you're saying if the exhaust flow
4 had not been closed, it wouldn't have happened?

5 A That's correct. I don't believe it
6 would have, sir. Of course, if the exhaust flow, if
7 the bag house was running, you wouldn't have a ten
8 foot section of pipe out either and there wouldn't
9 have been anybody vacuuming anything.

10 But the fact is that if you looked at
11 the equation of what was different on New Year's Eve
12 than Christmas Eve, you had the bag house shut down
13 and you got a stirring of the particulate. And
14 that's the only time that that happened, and that's
15 when the explosion occurred.

16 Q So you think that the vacuum was
17 pulling dust up from the bag house?

18 A No, I think that the vacuum activity
19 was creating air movement in the bag house that set
20 the particulate in motion. If there was no
21 particulate in motion, you don't have an explosion of
22 that bag house. And I don't think anybody is going
23 to come in here and say the bag house didn't explode.

24 So we know there was particulate,

1 buoyant, airborne particulate within the bag house.

2 And with it shut down, the only way it could occur is
3 the activity of the suction mechanism.

4 Q So do you believe this was, you don't
5 think this was an ignition of hydrogen gas within the
6 bag house?

7 A I'm not a chemist. And I can't define
8 or I don't have the experiential background nor the
9 education to deal with the specific chemical
10 properties of an exothermic event. I'm a fire
11 expert. I know what exothermic is. I know what heat
12 producing is, but I don't --

13 I'm not going to sit here and try to
14 tell you exactly what element is being released in
15 what quantity at what moment in time during an
16 exothermic event. I think that would be a good
17 question for a chemical engineer, sir.

18 Q When you say there is an exothermic
19 reaction and that one of the causes of that would
20 have been condensation --

21 A In order for the exothermic reaction to
22 occur, as I understand from reading about these
23 things, you need the aluminum fines and/or powder and
24 water. It's that mixture that creates the exothermic

1 so, no.

2 Q Have you gone back and re-evaluated
3 your opinions and conclusions after reading Roby's
4 report?

5 A Certainly.

6 Q And what have you --

7 A And reading all the other reports.

8 Q And what have you --

9 A I have read all of them.

10 Q And if you wouldn't interrupt, that
11 would help with the transcript. But what have you
12 concluded after re-reviewing your opinions and
13 conclusions?

14 A Having read their opinions and
15 reviewing mine, I saw no need to change. I saw
16 nothing in their reports that would make me want to
17 alter my opinions whatsoever.

18 Q Did you test in any way including
19 thought experiments, the possibilities outlined in
20 any of those reports?

21 A I looked at all of the reports. I
22 didn't try to out think or try to make sense out of
23 the other reports. Like I said, initially every
24 report generated for the three defendants accepted as

1 a premise, without evidence, that Mr. Edwards'
2 testimony should be nit-picked speculatively and use
3 the parts you like and take away the parts you don't
4 like.

5 I don't think you could do that. Every
6 one of them based their opinion that the fire started
7 inside the ductwork inside the building by
8 eliminating what Mr. Edwards said.

9 Q You mean Mr. Hodges?

10 A Because if he isn't lying or he isn't
11 grossly mistaken, they can't be right. And they
12 offered no evidence to support that, sir.

13 Q And just for the record, you said
14 Mr. Edwards. Did you mean Mr. Hodges?

15 A Mr. Hodges. Yes, sir. I'm sorry.

16 Q So do you think that Roby's report goes
17 against NFPA 921 then?

18 A Yes, sir, I do.

19 Q And that's for the reason that you just
20 stated that he's --

21 A Oh, for multiple reasons. I think
22 there were inaccuracies in a couple of spots. Yeah,
23 I think anybody that just eliminates without evidence
24 part of the database is not following the scientific

1 method, sir.

2 Q Do you think the clothing that the
3 workers were wearing played a role in the incident?

4 A The origin and cause of this fire, no,
5 sir, I do not. And that's the only role I was
6 playing.

7 Q How have you tested your hypothesis
8 that enough water or enough condensate accumulated to
9 cause this explosion?

10 A I didn't say that that specifically did
11 cause the explosion. I said it's a possibility.

12 Q But that's your opinion is that that's
13 what happened, right?

14 A It's my opinion that that's a
15 possibility. It's also my opinion that I have
16 expressed several times today that these events occur
17 in bag houses and the initiating mechanisms, the
18 initial mechanism the vast majority of time is never
19 identified.

20 So I was giving you a phenomenon that I
21 know exists in nature that is supported by the
22 testimony of all of the reports generated by the
23 other experts. They all know that water, aluminum
24 fines, exothermic reaction, that's fact. All I'm

1 saying is that this is a fact. I believe condensate
2 was present in the bag house because of the
3 temperature differential, etcetera. And it's a fact
4 that this combination can lead to enough heat to
5 cause an explosion.

6 I was giving an explanation for
7 something other than the activities of the gentleman
8 doing the vacuuming and the static incidence that he
9 was being exposed to. I was offering another, I mean
10 here's another possibility. That's all. Recognizing
11 that more times than not, you're never going to know
12 what happened in a bag house explosion.

13 Q Do you think it's a more likely
14 possibility?

15 A No, I don't know that it was more
16 likely or less likely. I know that the bag house
17 blew up. And I know that historically the initiating
18 mechanism for these explosions is undetermined.

19 Q Do you have a copy of Roby's report
20 with you?

21 A Yeah, I do.

22 Q Would you grab that for us please?

23 A Sure. I think his report was included
24 in all of the expert disclosures. Should be in that

1 building. I disagree with that. I think I made that
2 pretty clear all day. I disagree with his analysis
3 of the video, intimating that in his opinion the
4 video shows the explosion being inside the building
5 as opposed to outside. I disagree with that.

6 I disagree with his dew point analysis
7 with regard to the moisture accumulation, etcetera,
8 in that Rick used ambient inside temperature, ambient
9 outside temperature. I don't believe for a minute
10 that the temperature inside of that bag house was the
11 same as the air outside of the bag house, especially
12 if it was covered with snow as the ground was in the
13 photographs that we saw.

14 That would be almost like saying the
15 temperature outside your refrigerator is about the
16 same as it is inside, which is nonsense. I don't
17 think using the ambient air temperature was the
18 accurate way to do it. And that's what he did.
19 Those things come to mind. There were probably some
20 others but, you know.

21 Oh, yeah, the data regarding the
22 position of the ductwork being indicative of an
23 explosion inside the building, and he based that on
24 the movement from perpendicular with two of the

1 supports on the ductwork. I don't think that has any
2 validity at all. I mean that ductwork was attached
3 to a bag house that exploded and moved away from the
4 building, took the wall through which that ductwork
5 ran with it. And you don't think that ductwork is
6 going to move towards that wall? Certainly it is.
7 He is saying this is an indication of explosion
8 inside the building. I think that's wrong.

9 Q But that's just because the two of you
10 disagree about where the explosion started, right?

11 A No, that's because I know the ductwork
12 moved towards the exterior because of the movement of
13 the ductwork as a result of the explosion in the bag
14 house. So when Rick Roby got there and took these
15 pictures of the ductwork supports that were off
16 vertical and leaning towards the exterior wall, you
17 know, to say that that was an indicator that the
18 explosion occurred inside the building I believe is
19 wrong, and I disagree with his opinion.

20 Q And, again, if let's assume for a
21 second the explosion starts in the duct where the
22 vacuum hose is, then this would be consistent with
23 that explosion or with that scenario?

24 A No, it wouldn't.

1 A I think in the first photo, the top
2 left photo on page 13 of Combustion Science's Report,
3 I think that first photo shows a diagonal shadow on
4 the wall coming off of that trash can from light
5 coming from the left in the left of that photo, which
6 would be the general direction to where the vacuuming
7 operation was taking place.

8 I think if you look at the second photo
9 on the top, or even more clearly the bottom photo.
10 Now, theoretically, according to Rick Roby, you have
11 got an introduction of a blast of light from that
12 same direction, and the shadow on the wall
13 disappears. The only shadow you see is at the floor
14 level in what appears to be a straight line coming
15 from the bottom of that trash can.

16 I think that's that bottom stile that
17 you see on the door right where the kick plate would
18 be. You see that? Where the glass stops before it
19 reaches the floor, there is a six-inch stile or base
20 of the door. I think that's making that straight
21 line shadow there with the light coming from the
22 exterior.

23 Q You think that the six-inch border --
24 MR. MORRIS: Kick plate.

1 BY MR. SULLIVAN:

2 Q Kick plate is what causes the shadow
3 that you see in the bottom picture on page 13?

4 A On the floor, yes, sir. And that
5 straight line that it's on. I think that's
6 consistent with the straight, linear dimension of the
7 base of the door and with the light being outside the
8 door, filling the door with light except the bottom
9 six inches, which leave that shadow there.

10 I think that's what happened there.

11 And I think it's unmistakable that the shadow on the
12 wall being caused by the light to the left of the
13 trash can disappeared. It should have gotten more
14 pronounced if there is more light from the left, and
15 it completely disappeared. Didn't happen inside,
16 sir. It was outside.

17 Q If the explosion were up at the light
18 source, lit up the entire room from above, don't you
19 think that would cause the shadow or could cause the
20 shadow to decrease on the upper right side?

21 A Not as long as it was coming from the
22 same direction, sir.

23 Q It wasn't necessarily.

24 A Oh, you're saying that whatever this

1 fire that didn't have an explosion in the ductwork
2 coming out the end of the ductwork illuminated that
3 entire plant to look like photo number two in the
4 upper right corner of page 13? And nobody in the
5 building noticed that?

6 Q Do you have any testimony from people
7 that they didn't notice it?

8 A That's exactly right, sir. There is no
9 testimony that that ever occurred from any of the
10 people that were in that building.

11 Q And there is no testimony that it
12 didn't occur?

13 A I don't --

14 Q Do you have any testimony that it
15 didn't occur?

16 A I believe that it didn't occur. I've
17 read all the testimony of the people that were there,
18 and nobody described this, not one. And keep in mind
19 too, sir, that the 14-inch duct that we are talking
20 about with the fire in it is facing away from this
21 wall, correct?

22 It's running perpendicular to this wall
23 and away where the opening is. That ductwork would
24 have been like a big flashlight projecting the light

1 certainly a possibility.

2 Q All right. So is the exothermic
3 combustion the only possible ignition source that you
4 considered in developing your opinion?

5 A No, I just talked about potential of
6 creating static with the movement of the particulate
7 within the bag house itself, or whatever else causes
8 these incidents that the NFPA says the ignition
9 mechanism is unidentifiable.

10 Q All right. Would you consider it a
11 possibility that the ignition source for the bag
12 house explosion was the electrostatic charge given
13 off by the plaintiff's using the vacuum in the
14 ductwork?

15 A I am not at a static electricity
16 expert. I, frankly, don't know exactly the distance
17 of travel we are talking about here or whether or not
18 it could have done that, sir. I'm sure that one of
19 the engineers could explain that much better than I
20 could. I, frankly, don't know if you could run a
21 static spark that long. I really don't know.

22 Q All right. Is the possibility of the
23 electric sparks generated at the end of the vacuum
24 mechanism causing the bag house explosion, is that a

1 possibility that you considered at all?

2 A It's something that I considered but
3 I'm not an electrostatic expert. Is it possible? It
4 may very well be possible, sir.

5 Q So you did not do not do any studies
6 about the electrostatic properties of aluminum dust
7 in PVC pipe?

8 A Well, we are talking about a lot more
9 than PVC pipe. We're talking about from the PVC pipe
10 to the bag house. You're talking about 30 feet or so
11 of steel conduit.

12 Q What I'm talking about is in terms of
13 the ignition source, the electrostatic properties of
14 aluminum dust being sucked in through the end of a
15 PVC pipe?

16 A Sure. That could create a static
17 spark, and a static spark could ignite this
18 particulate.

19 Q All right. Is it possible then that
20 that was the ignition source that ran down the length
21 through the open damper into the bag house and caused
22 the explosion?

23 A That that was the, that's where the
24 fire started and it ran that way?

1 bag house provided, again, that we are using your
2 hypothesis and we're extracting the key piece of data
3 that he was standing there watching it.

4 Q All right. Now, you didn't attempt to
5 recreate the conditions as viewed by Mr. Hodges to
6 confirm or refute his testimony, did you?

7 A I don't know what you mean. I looked
8 down the pipe if that's what you mean. I saw that.

9 Q In other words, were you able to piece
10 together the ductwork with the damper to determine
11 whether or not it would be possible to see past the
12 flap in that back draft damper? You didn't do that?

13 A I didn't reassemble the ductwork, but I
14 lifted the flap that was still with the back draft
15 preventer or whatever they call it and you could have
16 seen through there. With that thing open you could
17 see through it. That's how the air got through it.

18 Q When it was opened you could see
19 through it?

20 A Sure. And if it was being held open,
21 you could see through it.

22 Q All right. But if it was closed, you
23 couldn't see through it?

24 A That's obvious.

1 A That's what he testified to, sir.

2 Q Did you do any studies to determine how
3 far it would have to be propped open, at what angle
4 it would have to be propped open for him to see past
5 it all the way down to where the ductwork took a
6 right turn as he testified?

7 A I think if you just lifted it up to the
8 point where it was above the opening of the 14-inch
9 cylindrical ductwork, if you just lifted it past
10 that, and you were looking at the bottom of the
11 ductwork, you're standing on a scissor lift, you're
12 looking at the bottom. You could see to eternity.
13 Of course, you could.

14 Q For Hodges' testimony to make sense the
15 material in the bottom of that ductwork would have to
16 be unevenly distributed; would it not?

17 A If it was -- it would have to be in a
18 configuration that he was able to see past it. And
19 that, sir, is what he testified to.

20 Q Now, you didn't try to do any studies
21 to determine how much material could have been in it
22 to allow him to see past it or not? You're taking
23 his testimony at face value as well; are you not?

24 A I'm taking the man's testimony that he

1 could see past it because that's what he said and
2 that there was accumulated dust, yeah, debris or dust
3 in the device, that it was in all the other piping,
4 which is why LCM was there in the first place. Yeah,
5 I think he was right.

6 Q So you're taking his testimony at face
7 value without doing any studies or analysis or
8 testing to determine it's validity?

9 A There is no study possible to try to
10 duplicate what was going on there. I didn't --

11 Q He could have taken --

12 MR. BROWN: Let him answer.

13 THE WITNESS: I read six reports that
14 came from the defendants. I didn't read any
15 of them doing any study of the depth of the
16 stuff. You could never know that, sir.

17 You can't do a study about something
18 for which you don't have the parameters for
19 the study. You can't do it. And nobody did
20 that, sir, not me or anybody else.

21
22 BY MR. HUDGINS:

23 Q Well, I'm just talking about you today.

24 A I'm telling you I read all the reports.

1 They didn't do it.

2 Q You didn't try to go out there and
3 confirm whether Hodges' testimony is reliable by
4 playing with the angle of the flap or seeing how high
5 it had to be cocked up in order to see past it? You
6 accepted what he said at face value?

7 A No. I didn't attempt to measure an
8 exact angle based on his testimony. I went out there
9 and I looked at that thing. And I lifted up the flap
10 and the flap lifted up. And you could open it and
11 you could see through that whole 14-inch opening if
12 you held the flap high enough.

13 I didn't try to create an uncreatable
14 evidentiary material with regard to the actual
15 configuration of the pile of fines or the actual
16 depth, etcetera. But I certainly proved that you can
17 lift up that flap and look through that duct. And
18 anybody can do that and that's what he said he did.

19 Q Now, you have been around fire issues
20 for your whole career?

21 A Long time, sir.

22 Q You understand fire properties, fire
23 propagation as much as anybody I have talked to
24 recently, and so let me ask you this. If Hodges'

1 testimony is to be believed that he could see all the
2 way through that back flow damper, all the way along
3 the pipe as it traveled outside of the building and
4 then took a right turn, and that he saw a fire ball,
5 he saw a fire ball turn the corner, wouldn't he have
6 had enough time to get his face out of the way?

7 A Without misstating what he said, I
8 don't remember him saying the fire ball turned the
9 corner. I remember him saying it emanated from
10 beyond the dust collector or the flash preventer or
11 whatever. I know that that was outside the building.
12 He was already looking outside the building when he
13 saw that.

14 Q How far is that? Do you know how many
15 feet that was from where --

16 A When I saw it, it was laying on the
17 ground and the hole was up there. I don't know
18 exactly.

19 Q Talking 40, 50 feet? How far? Where
20 they were on the scissor lift looking into the open
21 end of that pipe, let's just start with how far away
22 was the backflash damper? How many feet away?

23 A It was a couple feet outside the
24 building and it was maybe, I don't remember whether

1 A I don't know. I was looking at it on a
2 computer. Looked like it was continuous to me.

3 Q Okay. So you don't have an opinion as
4 to how fast the fire ball might have been traveling
5 along the --

6 A I think there is too many variables or
7 that would have been calculated, sir, and nobody
8 calculated that, including the engineers that were
9 making that study.

10 Q I'm going to jump back again to this
11 whole idea of exothermic reaction.

12 A Uh-huh.

13 Q You don't have an opinion as to whether
14 it was the material that ignited, that may have
15 ignited, or hydrogen gas that was given off as an
16 exothermic bi-product?

17 A That's probably true. The hydrogen gas
18 is given off during the oxidation process. And I
19 think that that's what makes it an exothermic
20 reaction. I know for a fact that solids and liquid
21 don't burn. The only thing in nature that burns is a
22 gas. All fire is gas.

23 Q You have got aluminum dust --

24 MR. BROWN: He has not finished his

1 sir, I would have to look it up. I don't have all
2 those numbers memorized.

3 Q I'm sorry. Didn't mean to interrupt.

4 A That's all right, sir.

5 Q You would agree with me that in order
6 for there to be self-combustion of this aluminum in
7 its reaction with H₂O, that it would have to reach a
8 certain specific temperature to ignite?

9 A I think you're saying two things sir.

10 You're saying self-combustion of the material that is
11 creating the exothermic heat.

12 Q Yes.

13 A But I think what we are saying occurs
14 in an explosion scenario like when the dust house
15 blows up, it's the heat being generated by the
16 exothermic activity reaches a point where it could
17 ignite the cloud that is circulating within the
18 device itself and that's what happened here.

19 Q You haven't done a study that involves
20 a specific temperature for this particular bag house,
21 have you?

22 A I have not, sir, no.

23 Q Do you know what temperature hydrogen
24 has to obtain before it combusts, hydrogen gas?

1 A The ignition temperature of hydrogen
2 gas? Again, sir, I'm sure I have seen it a million
3 times, but I would have to look it up. I don't have
4 those things committed to memory, sir.

5 Q All right. And so your opinion that
6 it's possible that there was an exothermic reaction
7 is based upon some literature that you have read but
8 primarily on the testimony of Hodges and the
9 videos?

10 A No. My understanding of the fact that
11 exothermic reactions occur between aluminum fines and
12 water. That's a fact. I don't need to depend on
13 anybody's testimony or any video. That's a fact.

14 Now, where or how that occurred within
15 the bag house if that was, in fact, the ignition
16 scenario, I don't think anybody will ever know.
17 There was nobody in there to see it or to monitor
18 it.

19 Q Have you ever been present during a
20 demonstration of an exothermic reaction between
21 moisture and aluminum that resulted in a fire or an
22 ignition?

23 A I've never conducted a test personally
24 that saw that happen. I have seen it done, but I was

1 not moving. And that's why in the first sentence of
2 five I say, "The bag house shut down during the duct
3 cleaning evolution was a substantial contributor."

4 Q I understand.

5 A And I believe it was.

6 Q I understand that. I'm just trying to
7 clarify that it's not the mere shutting down of the
8 bag house that creates that environment; it's the
9 shutting down of the bag house and the other elements
10 that you have pointed to?

11 A That's correct, sir.

12 Q Okay. And when you referred to in
13 paragraph six you say that, and you're referring to
14 again, NFPA 651 and 484, "...indicate that a mixture
15 of aluminum dust and water leads to an exothermic or
16 a heat producing reaction which can, under ideal
17 circumstances lead to fire and/or explosive
18 incident."

19 A Sure.

20 Q What are the ideal circumstances?

21 A It depends on the event, sir. The
22 ideal circumstances in a beaker might be a quarter of
23 a drop of water and a quarter of a drop of dust in
24 some factory somewhere. It would be substantial

1 different quantities. But in order for an explosion
2 and/or a fire to occur, as I explained under
3 Mr. Sullivan's questioning, the LEL, UEL, that narrow
4 range must be met and the ignition has to occur at
5 that time.

6 Q Okay. But as you sit her here now,
7 within your opinions you can't say what the ideal
8 circumstances are for the Dustex bag house and the
9 aluminum dust particulates that were present in it on
10 December 31, 2010; is that correct?

11 A Other than to say that it was reached
12 and an explosion occurred, sir, that's correct,
13 sir.

14 Q And in part that's what we talked about
15 confirmational bias is because an explosion occurred,
16 then you're saying those conditions must have been
17 met in this case?

18 A Absolutely.

19 Q And, again, and I think Mr. Hudgins
20 asked you about this. You can't offer an opinion as
21 to what the critical amount of aluminum dust would be
22 to create the exothermic reaction leading to ignition
23 in this case, correct?

24 A I think all aluminum dust, as I told

1 the other gentlemen, it all leads to an exothermic
2 reaction. It depends, again, on the size of the
3 cloud, the particulate, the size of the particles,
4 all of the things that were read through in the five
5 point process and how much heat is going to be
6 necessary to ignite that.

7 Q And the ignition point --

8 A And we can't guess that, and that's
9 what I would be doing. I won't do that, sir.

10 Q And maybe my question wasn't clear, but
11 that's what I was getting to. You can't sit here and
12 tell us you would need this amount of water, this
13 amount of dust to create an exothermic reaction that
14 would have to occur for this period of time to get to
15 a heat level that would ignite the particulates that
16 were stirred up from the vacuuming procedure?

17 A That's correct.

18 Q You can't do that?

19 A That's right. I cannot.

20 Q The conditions you referred to in terms
21 of the condensation occurring?

22 A Yes.

23 Q And you said that only the ambient
24 temperature was referred to for the outside of the

1 bag house and --

2 A In Mr. Roby's analysis, that's
3 correct.

4 Q Okay. But do you know how long the bag
5 house had been shut down for prior to the arrival of
6 the plaintiffs in this case?

7 A No. As a matter of fact, I tried to
8 resolve that issue. Mr. Collins told me that it was
9 operating, the machine that was being serviced by
10 that bag house, was operating on the 30th. It was
11 shut down on the 30th so that a section of pipe could
12 be removed and an analysis of the severity of the
13 dust accumulation would be made.

14 He does not remember whether or not
15 after they replaced the duct, which they did, it was
16 turned back on. He knows when he got there Friday
17 morning, on the 31st, he knows that it was not
18 running. The machine was not running and the bag
19 house was not operating. And that was at 8:30 or
20 about 8:30, so that's the window we have.

21 If I go to one of the defendant's
22 expert reports, one of them has them shutting, he
23 says that the thing was shut down on November 30,
24 which I'm sure was a typo and it should have been

1 December 30. But he gave me a 30-day window. Rick
2 Roby I think gave me a ten to 11-hour window.

3 And I don't know where he got his
4 factual data with regard to the actual shut down
5 time. Because based on the folks that I have talked
6 to and what I have read, sir, it was shut down on the
7 30th and it was not running at 8:30 on the 31st. But
8 whether or not it was re-energized in that window of
9 opportunity, sir, I have no idea.

10 Q Would that in any way be significant to
11 your determination as to the conditions necessary for
12 the exothermic reaction?

13 A I don't think so. I think that the
14 potential for exothermic accumulation is there any
15 time the bag house is running.

16 Q Running or shut down?

17 A I think when it's running.

18 Q Okay. All right. Because that's the
19 warm air when it's colder outside than it is
20 inside?

21 A Right. Warm air and you're going to
22 get the humidity differential, etcetera. And like I
23 said too, the exact circumstances in that bag house
24 we will never know and nobody will be able to

1 positively extrapolate if that was even the ignition
2 mechanism.

3 And like I keep saying, the NFPA makes
4 it crystal clear the vast majority of the times these
5 explosions occur, the ignition mechanism is never
6 identified, and that's in both 651 and 484.

7 Q But in terms of your explanation that
8 it's the condensation as a result of the outside
9 temperature or the ambient temperature and the inside
10 temperature of the bag house being the cause of the
11 condensation to create the water for the exothermic
12 reaction, is that correct so far?

13 A That's a possibility. That's how
14 condensate occurs. When nature is seeking thermal
15 equilibrium, it occurs. And when it occurs in this
16 environment with fines or aluminum, aluminum dust,
17 the potential for exothermic heat production is very
18 real. And that's all I was saying in my report.

19 Q And I understand that. What I want to
20 find out is, is there any other source of water to
21 create that reaction that you were able to find as a
22 result of your investigation?

23 A You know, I'm not a meteorologist but I
24 would imagine that the moisture content of the air

1 within the building being drawn into the bag house
2 may have contributed to some extent. But I'm not
3 sure how much or if, to tell you the truth.

4 Q From where?

5 A The air from inside the building.

6 Q And did you do anything to test the air
7 inside of the building to determine its moisture
8 level or relative humidity?

9 A I would have had to do it at 9:30 a.m.
10 on the 31st of December and, sir, I wasn't there.
11 Because every second thereafter it changed.

12 Q We discussed before too, and I think
13 you agreed, that one of the bi-products of the
14 exothermic reaction of the aluminum water is hydrogen
15 gas?

16 A Correct.

17 Q Is the ignition point for hydrogen gas
18 different from the ignition point for aluminum dust
19 and aluminum dust cloud?

20 A Again, the dust, the aluminum fines
21 don't burn. It's only the gas that burns, sir.
22 Solids and liquids don't burn.

23 Q So the only thing that's burning is the
24 hydrogen gas that's produced from this?

1 A Whatever gases are being produced. I
2 don't know if it's exclusively hydrogen. There might
3 be other products being generated also, sir.

4 Q So when you referred to the dust cloud
5 as a fuel source --

6 A Yeah.

7 Q -- what's burning? If dust is
8 particulate, which is a solid?

9 A Right.

10 Q Okay. So that's, what, how does that
11 reaction occur? How does the ignition of that
12 occur?

13 A The finer the particulate, the easier
14 to ignite. You could take a, if there was a block of
15 aluminum here, I could give you my Bic lighter and
16 you could stand there until you're blue in the face,
17 and you would have a very difficult time getting it
18 to melt.

19 And I could take a little pen knife and
20 scrape a tiny, little piece of aluminum and hand you
21 that same Bic lighter and it will burn as soon as you
22 touch it. Mass of the fuel dictates a lot to
23 combustibility. That's why the movement of the
24 cloud, the creation of the cloud, etcetera, that's

1 all a contributor in the severity of the event. And
2 that's, the same thing is true with natural gas
3 explosions, propane explosions.

4 Q So that's the fuel portion of the
5 explosion?

6 A Yes, sir.

7 Q And what you're saying is that the
8 vacuuming increased the fuel for whatever ignition
9 occurred?

10 A I think the vacuuming process created
11 the fuel. It may be that the fines become buoyant
12 and the cloud to occur within the bag house;
13 otherwise, there can't be an explosion.

14 Q And that would occur within the
15 ductwork too where they are working? It would create
16 some type of dust cloud from stirring up the
17 vacuuming?

18 A Yeah.

19 Q And I know you have already
20 acknowledged that, yes, the conditions necessary for
21 a fire or explosion were present in the ductwork?

22 A Correct.

23 Q Okay. The hydrogen gas part though, if
24 that's created in the bag house and the vacuum is

1 running, and it may be pulling a small amount of air,
2 would that hydrogen gas also come back through the
3 ductwork somehow? Would that be present in the
4 ductwork between the bag house and where the
5 vacuuming is taking place?

6 A I guess it would depend on the ability
7 of a four-inch diameter device to evacuate all of the
8 space, the air space in an 18-inch diameter device
9 over a period of feet and then go into a huge device.
10 Remember we're only using that PVC, that's all we
11 got.

12 Q I understand.

13 A I didn't do a calculation. I don't
14 know if anybody ever could.

15 Q Let me ask it --

16 A But it doesn't seem logical to me.

17 Q All right. Let me ask it a different
18 way. You said before that there would always be air
19 flow of some type going from the building out to the
20 bag house, regardless of whether or not the bag house
21 was operating, correct?

22 A Yeah.

23 Q And even with the back draft damper
24 with that flap closed, you said that there would

1 still be some air flow that would go through?

2 A Whatever air flow was there some would
3 about by. That flapper wasn't intended to
4 hermetically seal the pipe. It was intended to stop
5 something from going back through the preventive
6 mechanism and into the extended ductwork beyond the
7 mechanism.

8 Q The air or dust from the bag house?

9 A Whatever, yes, sir.

10 Q All right. Well, with that being said
11 then, not hermetically sealed, and you said there's
12 air flow going in that direction, would there be any
13 air flow coming back from the bag house that would
14 contain this hydrogen gas that was created by the
15 exothermic reaction?

16 A You're talking about when the bag house
17 is shut down?

18 Q Well, clearly when it's shut down
19 because otherwise all the --

20 A The air is going the other way.

21 Q Yes.

22 A I wouldn't think so. I mean you would
23 have to have a awful lot of hydrogen gas accumulated
24 there to get it up through that ductwork and past it.

1 Ask Rick Roby that one. When you get Roby here, ask
2 him that one. I'm sure Rick will have an answer for
3 you on that.

4 Q Okay. With respect to that exothermic
5 reaction, heat being generated, do you know how long
6 it would take for that reaction to reach a
7 temperature that you believe would be sufficient to
8 ignite the aluminum dust cloud or the hydrogen?

9 A I read the documents that were
10 supplied, the 50 hours that was a number that
11 somebody suggested, without intimating to my
12 satisfaction when that 50 our clock started ticking.
13 But I remember reading the 50-hour indicator.

14 I think that the rapidity with which
15 the exothermic reaction would achieve any given
16 temperature would be dictated by the amount of
17 material being exposed to the water and that's the
18 sole dictator.

19 Like if you have got a ounce of
20 material reacting exothermically as a result of
21 moisture and contamination, you would get X heat. If
22 you had a ton of that material acting with the water,
23 you're going to get Y heat. And Y heat is going to
24 be a lot more than X heat. So it's going to be

1 dictated by the quantity of material, the quantity of
2 water, etcetera.

3 Q Right.

4 A I don't think you can necessarily put a
5 stopwatch on it, unless you were doing it with a
6 given quantity. You said I'm going to take a pound
7 and I'm going to put a thermal couple in there and
8 see how long it takes one pound of contaminated
9 material to exothermically reach X temperature.

10 That's easy to do. Anybody can do that.

11 Q Those are all the unknown factors we
12 have here. We don't know the composition of the dust
13 that was present?

14 A Correct.

15 Q To the extent that it was just pure
16 aluminum dust or other materials that were combined,
17 which would affect that reaction rate, correct?

18 A Oh, sure.

19 Q Okay. The amount of that material
20 would be a factor that we don't know that would
21 affect the rate of reaction, correct?

22 A Correct.

23 Q The amount of water, whether it's
24 condensation or whether you pour a pitcher of water